26. Navigation, Transportation, and Traffic

26.1 Introduction

This chapter describes the existing navigation, transportation, and traffic conditions for the Extended, Secondary, and Primary study areas. Descriptions and maps of these three study areas are provided in Chapter 1 Introduction. The navigation section discusses the physical characteristics of major waterways in the three study areas, with emphasis on the waterways located in Glenn and Colusa counties. The transportation and traffic section focuses on the existing vehicle, rail, and air traffic facilities that are expected to be used during Project construction and operation or are located near the Project facility sites.

The regulatory setting for navigation, transportation, and traffic is discussed briefly in this chapter, and is presented in greater detail in Chapter 4 Environmental Compliance and Permit Summary.

This chapter focuses primarily on the Primary Study Area. Potential impacts in the Secondary and Extended study areas were evaluated and discussed qualitatively. Potential local and regional impacts from constructing, operating, and maintaining the alternatives were described and compared to applicable significance thresholds. Mitigation measures are provided for identified significant impacts, where appropriate.

26.2 Environmental Setting/Affected Environment

26.2.1 Methodology

26.2.1.1 Navigation

Navigable waters for the purposes of this analysis have been defined using both the federal and State codes:

- Navigable waters of the United States are those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. A determination of navigability, once made, applies laterally over the entire surface of the waterbody, and is not extinguished by later actions or events which impede or destroy navigable capacity (33 CFR Part 329).
- Navigable waters means waters which come under the jurisdiction of the United States Corps of Engineers and any other waters within the state with the exception of those privately owned (California Harbor and Navigation Code, Chapter 1).

Major waterways within the Extended, Secondary, and Primary study areas were identified using maps, boating guides from the California Department of Boating and Waterways, and marine highway corridor guides from the U.S. Department of Transportation.

26.2.1.2 Transportation and Traffic

Roadway Condition

Pavement condition was determined by driving the roads that are the main access routes to Project facilities within Glenn and Colusa counties. The pavement condition categories and criteria for each category are provided in Table 26-1.

Table 26-1
Pavement Condition Categories and Criteria

Pavement Condition	Criteria
Good	Fully paved with very few cracks or potholes that result in desirable driving conditions
Fair	Fully paved with some cracks or potholes that result less-than-desirable driving conditions
Poor	Un-paved or paved with significant cracks and potholes that need to be avoided while driving and result in undesirable driving conditions

Source: MTC, 1986.

Roadway Classification

Major roadways within the Extended, Secondary, and Primary study areas were identified using Google maps. For the Primary study area, roadway classifications were determined using County general plans. As an example, the roadway classifications for Glenn County are presented in Table 26-2.

Table 26-2
Roadway Classifications for Glenn County

Roadway Classification	Description
Minor Collector	Carries traffic from residential subdivisions/settlements, farms, logging operations, and other local area trip generators to higher classification roads.
Collector	Primarily intra-county travel serving smaller communities and countywide trip generators, such as consolidated schools, freeway interchanges, major shipping terminals, major recreational facilities, and concentrations of commercial/industrial activity.

Source: Glenn County, 1993.

Roadway Level of Service

Both Glenn County and Colusa County use the Level of Service criteria, as defined by the 2000 Highway Capacity Manual (HCM), to assess the performance of its street and highway system and the capacity of roadways. Level of Service is a qualitative assessment of the quantitative effects of such factors as traffic volume, roadways geometrics, speed, delay, and maneuverability on roadway and intersection operations. Roadway traffic flow characteristics for different Levels of Service are described in Table 26-3.

Table 26-3
General Level of Service Criteria for Roadways

Level of Service	V/C	Traffic Flow Characteristics
A	0.00 – 0.60	Free flow; insignificant delays
B	0.61 – 0.70	Stable operation; minimal delays
C	0.71 – 0.80	Stable operation; acceptable delays
D	0.81 – 0.90	Approaching unstable flow; queues develop rapidly but no excessive delays
E	0.91 – 1.00	Unstable operation; significant delays
F	> 1.00	Forced flow; jammed conditions

Note:
V/C = traffic volume (demand) / roadway capacity ratio

Source: Transportation Research Board, 2010.

Traffic Operations and Capacity

Average Daily Traffic (ADT) volumes were estimated for representative segments of the roadways that would be used to access the site of the proposed pump installation at the Red Bluff Pumping Plant (a Secondary Study Area Project facility). A four percent growth factor was applied to the most recent ADT counts available from Tehama County and the California Department of Transportation (Caltrans), and was determined from historical traffic data.

ADT volumes for 2010 for Glenn County roads were estimated based on a three percent growth factor applied to the most recent ADT counts available from Glenn County and Caltrans. A three percent growth factor was determined from historical data in the Glenn County General Plan (Glenn County, 1993).

ADT volumes for 2010 for Colusa County roads were estimated based on a two percent growth factor applied to the most recent ADT counts available from Colusa County and Caltrans. A two percent growth factor was determined from historical data in the Colusa County General Plan (Colusa County, 1989).

An update to the Glenn County General Plan (1993) began in 2006, but has since been put on hold and an estimate for completion of that update is not available. The Colusa County General Plan was updated in July 2012. For planning-level analysis, Caltrans identifies Level of Service D as the acceptable mobility criteria. The Glenn County and Colusa County general plans both identify Level of Service C as the acceptable mobility criteria (Glenn County, 1993 and Colusa County, 2012). These criteria were used for the quantitative analysis for roadways within the Primary Study Area. A description of roadway operations for each Level of Service and the associated criteria for Caltrans roadways are presented in Table 26-4. A description of roadway operations for each Level of Service and the associated criteria for Glenn and Colusa County roadways are presented in Table 26-5.

Table 26-4
Caltrans Average Daily Traffic Level Of Service Criteria

Level of Service	Two-Lane Highway	Four-Lane Freeway
A	Undefined	Undefined
B	< 3,300	< 22,400
C	< 7,100	< 32,300
D	< 13,100	< 42,500
E	< 24,900	< 49,700
F	24,900	49,700

Source: Transportation Research Board, 2010.

The Caltrans average daily traffic Level of Service criteria are based on two- and four-lane highway daily service volumes as defined by the HCM. The terrain and traffic patterns assumed for these criteria are consistent with those observed in the Primary Study Area. The HCM does not provide average daily traffic Level of Service criteria for interstate freeways. The four-lane highway Level of Service criteria are considered appropriate for I-5 within the Primary Study Area. Some roadways to the Project facility sites may not have vehicle count information available. For these facilities, Level of Service operational analysis has not been conducted.

Table 26-5
Glenn and Colusa County Average Daily Traffic Level Of Service Criteria

Level of Service	Minor Collector (2-lane)	Collector (2-lane)
A	< 1,000	< 1,300
B	< 3,000	< 3,900
C	< 5,500	< 7,500
D	< 8,750	< 12,600
E	< 11,200	< 16,900
F	11,200	16,900

Source: Fehr & Peers, 2009.

26.2.2 Extended Study Area

26.2.2.1 Navigation

The 39 counties that are included within the Extended Study Area have many navigable waterways. Marine traffic within the Extended Study Area varies from commerce to recreation. Marine traffic congestion varies from waterway to waterway and by study area, but generally, there is expected to be more commercial traffic (e.g., in the shipping lanes near the ports) during working hours Monday through Friday, and there is expected to be more recreational traffic during weekends and holidays.

Marine facilities represent substantial transportation capacity within the Extended Study Area. Navigable coastal waters parallel the entire I-5 corridor, including numerous deep and safe rivers, bays, and ports and serving as extensions of the surface transportation system, particularly for freight and goods movement. Commercial ports, ferries, and bridges exist within the Extended Study Area and include facilities that are part of the Marine Highway Program overseen by the U.S. Department of Transportation Maritime Division.

Two designated Marine Highway (M-) corridors lie within the Extended Study Area: the M-5 corridor and the M-580 corridor. The M-5 corridor includes the Pacific Ocean coastal waters, connecting commercial navigation channels, ports, and harbors from San Diego to the U.S.-Canada border north of Seattle, Washington. The corridor spans Washington, Oregon, and California along the West Coast. It connects to the M-84 corridor at Astoria, Oregon, and the M-580 corridor at Oakland, California. The M-580 corridor includes the San Joaquin River, Sacramento River, and connecting commercial navigation channels, ports, and harbors in Central California from Sacramento to Oakland (USDOT, 2010).

Typical marine traffic within the Extended Study area is described geographically in Table 26-6.

Neither San Luis Reservoir, nor the Wildlife Refuges, within the Extended Study Area, is considered to be a navigable waterway.

Table 26-6
Navigable Waters in the Counties that Comprise the Extended Study Area

Geographic Area	Description of Typical Navigation	Major Waterways	Counties
Shasta Lake	Houseboats and smaller recreational watercraft, consisting of kayaks, canoes, personal sailing crafts, jet-skis, and small motorized boats for fishing and water skiing. Ferry service to the Shasta Caverns on the McCloud arm of the Lake.	Pit River, McCloud River, Sacramento River, Squaw Creek	Shasta
Upper Central Valley (Sacramento Valley)	The majority of the Sacramento Valley waterways are limited to small recreational watercraft and sport fishing by flows and waterway depths. The Lower Sacramento River carries marine traffic through the Sacramento Deep Water Ship Channel.	Sacramento River, Bear River, Feather River, Yuba River	Butte, Colusa, Glenn, Placer, Plumas, Sutter, Tehama, Yolo
Lower Central Valley (San Joaquin Valley)	The majority of the San Joaquin Valley waterways are limited to small recreational watercraft and sport fishing by flows and waterway depths. The Lower San Joaquin River carries marine traffic and through the Port of Stockton.	San Joaquin River, Stanislaus River, Kings River, Merced River, Kern River, Kaweah River	Fresno, Kern, Kings, Madera, Merced, San Joaquin, Stanislaus, Tulare
Sacramento-San Joaquin Bay-Delta	Commercial navigation channels and ports are prevalent within the Bay-Delta. There is a high volume of recreational traffic within this area, consisting of motorized marine craft for fishing, skiing, and boating.	Sacramento-San Joaquin Delta, American River, Folsom Lake, Sacramento River, Napa River, Napa-Sonoma Marsh, Suisun Bay, San Pablo Bay	Alameda, Contra Costa, Sacramento, Solano, Napa
Gold Country	The majority of these waterways are limited to small recreational watercraft and sport fishing by flows, structures (e.g., dams), and waterway depths.	Calaveras River, Stanislaus River, Tuolumne River, Lake Tahoe, American River, Folsom Lake, Cosumnes River, Mokelumne River	Calaveras, El Dorado, Nevada, Tuolumne
Central Coast	The majority of these waterways are limited to small recreational watercraft and sport fishing by flows, structures (e.g., dams), and waterway depths.	Pajaro River, San Lorenzo River, Santa Ynez River, Santa Maria River, Lake Cachuma	Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Clara, Santa Cruz
South Coast/Inland Empire	These waterways are primarily seasonal, and in some instances, channelized by concrete. The Colorado River is the largest and most widely trafficked of the waterways. Traffic is generally recreational.	Ventura River, Los Angeles River, Santa Clara River, San Gabriel River, Santa Ana River, San Diego River, Tijuana River, Colorado River	Los Angeles, Orange, San Diego, San Bernardino, Ventura
Salton Sea	Recreational watercraft only.	Salton Sea, New River, Whitewater River, Alamo River	Imperial, Riverside

Source: USDOT, 2010; maps.google.com, 2013.

26.2.2.2 Transportation and Traffic

The Extended Study Area includes many freeways, highways, and local roadways. For each of the 39 counties that comprise the Extended Study Area, Table 26-7 lists the major roadways (i.e., interstate freeways [I], U.S. highways [U.S.], and State Routes [SRs]). Traffic congestion in these areas can vary considerably depending on the location, season, and time of day. Typical baseline conditions are congestion during commute hours on weekdays in urban settings, and congestion on weekends and off-peak hours on weekdays if these roads serve recreational facilities or recreational areas.

Table 26-7
Major Roadways in the Extended Study Area

County	Major Roadways
Alameda	I-80, I-580, I-680, I-880, and I-980, and numerous SRs
Butte	SR 32, SR 70, SR 99, SR 149, SR 162, and SR 191
Calaveras	SR 4, SR 12, SR 26, and SR 49
Colusa	I-5, SR 16, SR 20 and SR 45
Contra Costa	I-80, I-680, SR 4, SR 24 and SR 242
El Dorado	SR 49, SR 193, SR 89, and U.S. 50
Fresno	I-5, SR 33, SR 41, SR 99, SR 145, SR 168, SR 180, and SR 198
Glenn	I-5, SR 45 and SR 162
Imperial	I-8, SR 86, and SR 111
Kern	I-5, SR 14, SR 58, SR 99, and SR 178
Kings	I-5, SR 33, SR 41, SR 43, and SR 198
Los Angeles	I-5, I-10, I-105, I-110, I-210, I-405, I-605, I-710 and numerous SRs
Madera	SR 41, SR 49, SR 99, and SR 145
Merced	I-5, SR 33, SR 99, and SR 152
Monterey	SR 1, SR 68, SR 183, and U.S. 101
Napa	I-80, SR 29, SR 121, SR 128, and SR 221,
Nevada	I-80, SR 20, SR 49, and SR 89
Orange	I-5, I-405, I-605, and numerous SRs
Placer	I-80, SR 20, SR 28, SR 49, SR 65, SR 89, SR 193, and SR 267
Plumas	SR 36, SR 70, SR 89, and SR 147
Riverside	I-15, I-215, I-10 and numerous SRs
Sacramento	I-5, I-80, SR 50, SR 99, SR 160, and U.S. 50
San Benito	SR 25, SR 146, SR 156 and U.S. 101
San Bernardino	I-10, I-15, I-40, I-215 and numerous SRs
San Diego	I-5, I-8, I-15, I-805, and numerous SRs
San Joaquin	I-5, I-205, I-580, SR 4, SR 33, SR 99, and SR 120
San Luis Obispo	SR 1, and U.S. 101
Santa Barbara	SR 1, SR 217, SR 154, and U.S. 101
Santa Clara	I-280, I-680, I-880, numerous SRs and U.S. 101
Santa Cruz	SR 1, and SR 17
Shasta	I-5, SR 44, and SR 273
Solano	I-80, I 505, I-680, I-780, SR 12, and SR 113
Stanislaus	I-5, SR 99, SR 120, SR 132,

Table 26-7
Major Roadways in the Extended Study Area

County	Major Roadways
Sutter	SR 20, SR 70, SR 99, and SR 113
Tehama	I-5, SR 36, and SR 99
Tulare	SR 99 and SR 198,
Tuolumne	SR 49 and SR 108
Ventura	SR 1, SR 23, SR 33, SR 118, SR 126 and U.S. 101
Yolo	I-5, I-80, I-505, SR 16, and SR 113

Notes:
I = Interstate Freeway
SR = State Route
U.S. = U.S. Highway

Source: maps.google.com, 2013.

26.2.3 Secondary Study Area

26.2.3.1 Navigation

Similar to the Extended Study Area, marine traffic congestion varies across the waterways and study area, but there is generally more commercial traffic (e.g., in the shipping lanes near the ports) during working hours Monday through Friday and more recreational traffic during weekends and holidays. There are 22 counties included in the Secondary Study Area. Fourteen of the 22 counties are also located in the Extended Study Area. Table 26-8 expands on the information provided in Table 26-6 by including the additional Secondary Study Area counties.

Table 26-8
Navigable Waters in the Counties that Comprise the Secondary Study Area

Geographic Area	Description of Typical Navigation	Major Waterways	Counties
Upper Central Valley (Sacramento Valley)	The majority of the Sacramento Valley waterways are limited to small recreational watercraft and sport fishing by flows and waterway depths. The lower Sacramento River carries marine traffic through the Sacramento Deep Water Ship Channel.	Sacramento River, Bear River, Feather River, Yuba River	Yuba
Sacramento-San Joaquin Bay-Delta	Commercial navigation channels and ports are prevalent within the Bay-Delta. There is a high volume of recreational traffic within this area, consisting of motorized marine craft for fishing, skiing, and boating.	Sacramento-San Joaquin Delta, American River, Sacramento River, Napa River, Napa-Sonoma Marsh, San Francisco Bay, Suisun Bay, San Pablo Bay	Sonoma, Marin, San Francisco, San Mateo
North Coast	Generally recreational motorized and non-motorized marine craft for fishing, skiing, and boating.	Klamath River downstream of the Trinity River, Trinity River, Smith River, Mad River, Eel River, Russian River, Navarro River	Del Norte, Humboldt, Trinity

Source: USDOT, 2010; maps.google.com, 2013.

26.2.3.2 Transportation and Traffic

For each of the 22 counties included in the Secondary Study Area, Table 26-9 lists the major roadways. Fourteen of the 22 counties in the Secondary Study Area are also located within the Extended Study Area (Table 26-7), and are not duplicated in Table 26-9. Similar to the Extended Study Area, traffic congestion in these areas can vary considerably depending on the location, season, and time of day. Typical baseline conditions are the same as those described for the Extended Study Area.

Table 26-9
Major Roadways in the Secondary Study Area

County	Major Roadways
Del Norte	I-101 and I-199
Humboldt	U.S. 101, SR 299
Marin	U.S. 101, SR 1, and SR 37
San Francisco	I-80, I-280, U.S. 101, SR 1, and SR 35
San Mateo	U.S. 101, I-280, I-380, SR 1, SR 82, SR 84, and SR 92
Sonoma	U.S. 101, SR 1, SR 12, SR 116, SR 121, and SR 128
Trinity	SR 3, SR 36, and SR 299
Yuba	SR 20, SR 65, and SR 70

Notes:
I = Interstate Freeway
SR = State Route
U.S. = U.S. Highway

Source: maps.google.com, 2013.

Three roadways in Tehama County were identified as primary access roads to the site of the proposed pump installation at the Red Bluff Pumping Plant. The roadways are listed in Table 26-10, including a summary of their observed characteristics.

Table 26-10
Characteristics of Roadways in Tehama County that are Main Access Routes to the Proposed Pump Installation Site at the Red Bluff Pumping Plant[a]

Roadway	Number of Lanes	Roadway Condition	Comments
I-5	4	Good[b]	Divided
Antelope Boulevard	4	Good	Has turning lanes
South Main Street	4	Good	Has turning lanes
Diamond Avenue	2	Good	

[a]The expected access route to the proposed pump installation site is as follows: from I-5 southbound, travel south on Diamond Avenue in Red Bluff. From I-5 northbound, travel west on Antelope Boulevard, south on South Main Street, and then south on Diamond Avenue in Red Bluff.

[b]Good roadway condition is defined as fully paved with very few cracks or potholes that result in desirable driving conditions.

Note:
I = Interstate Freeway

ADTs on the selected representative road segments are presented in Table 26-11.

Table 26-11
ADT for Selected Roads in Tehama County

Roadway	Segment	Year	ADT	Calculated 2010 ADT*
I-5	Glenn County Line to SR 36	2010	38,000	38,000
Diamond Avenue	South Main Street to end of road	2007	5,344	6,012

*Calculated volumes are based on four percent average annual growth rate (City of Red Bluff, 2011).

Notes:
ADT = Average Daily Traffic
I = Interstate Freeway
SR = State Route

Source: City of Red Bluff, 2011; Caltrans, 2009.

26.2.4 Primary Study Area

26.2.4.1 Navigation

The major waterway that flows through the Primary Study Area is the Sacramento River, which is regulated by Shasta Dam and is navigable year round. The river is 327 miles long and is considered a navigable river from its mouth to Keswick Dam, a distance of 301 miles.

The State of California, as covered by the California Constitution, allows for public access to waterways, further empowered by the public trust doctrine. Marine traffic within the Primary Study Area (which is located at the Delevan Pipeline Intake/Discharge Facilities) is recreational, and is limited to motorized and non-motorized watercraft for the purposes of fishing and boating.

Peak flows in the Sacramento River generally occur in the late winter months in Wet years and peak in July in the Dry years due to Shasta Dam releases. Flows during the recreation season (Memorial Day to Labor Day) do not vary a great deal across water year types. The river is navigable throughout the recreation season in all water year types, with flows at Bend Bridge and Red Bluff Diversion Dam ranging from approximately 6,000 cfs to 13,000 cfs.

26.2.4.2 Transportation and Traffic

Roadway Traffic Levels and Condition

The Glenn County roadways within the Primary Study Area are considered minor collectors, except Canal Road, which is considered a collector. All Colusa County roadways are considered minor collectors.

Table 26-12 describes the routes that are expected to be used to access Project facility sites during Project construction, operation, and maintenance. These routes include existing roads and new permanent roads to be constructed as part of the Project. Figure 3-1 in Chapter 3 Description of the Proposed Project/Proposed Action and Alternatives shows the locations of these roads relative to the Project facilities.

Table 26-12
Expected Roadway Access Routes to Project Facilities

Facility #	Project Feature	Access Route
1a	Sites Reservoir Inundation Area (northern area)	• From I-5, travel west on County Road 68, turn left on County Road D, turn right on County Road 69, and continue straight on North Road (new permanent)
1b	Sites Reservoir Inundation Area (central area)	• From I-5, travel west on Maxwell Sites Road
1c	Sites Reservoir Inundation Area (southern area)	• From I-5, travel west on Maxwell Sites Road, turn left on Sulphur Gap Road (new permanent), and turn right on Huffmaster Road • From I-5, travel west on Maxwell Sites Road, turn left on Sulphur Gap Road (new permanent), and turn right on Lurline Road (new permanent, detour during construction)
2a	Sites Dam	• From I-5, travel west on Maxwell Sites Road
2b	Golden Gate Dam	• From I-5, travel west on County Road 68, turn left on County Road D, turn right on County Road 69, turn left on Eastside Road (new permanent), and turn right on new permanent O&M road • From I-5, travel west on Maxwell Sites Road, turn right on Eastside Road, and turn left on new permanent O&M road
2c	Saddle Dams	• From I-5, travel west on County Road 68, turn left on County Road D, turn right on County Road 69, continue straight on North Road (new permanent) for Saddle Dams 7, 8, and 9, or turn left from North Road onto Saddle Dam Road (new permanent) for Saddle Dams 1, 2, 3, 4, and 5, or turn left from North Road onto new permanent O&M road for Saddle Dam 6, or turn left from County Road 69 onto Eastside Road (new permanent) and turn right on new permanent O&M road for the Golden Gate Saddle Dam • From I-5, travel west on Maxwell Sites Road, turn right on Eastside Road and turn left on new permanent O&M road
3a 4a	Saddle Dam Recreation Area Saddle Dam Road	• From I-5, travel west on County Road 68, turn left on County Road D, turn right on County Road 69, continue straight on North Road (new permanent), and turn left on Saddle Dam Road (new permanent)
3b 4b	Lurline Headwaters Recreation Area Lurline Road	• From I-5, travel west on Maxwell Sites Road, turn left on Sulphur Gap Road (new permanent), and turn right on Lurline Road (new permanent, detour during construction)

Table 26-12
Expected Roadway Access Routes to Project Facilities

Facility #	Project Feature	Access Route
3c	Antelope Island Recreation Area	• From I-5, travel west on Maxwell Sites Road, turn left on Sulphur Gap Road (new permanent), turn right on Huffmaster Road, and turn left on new temporary construction road • From I-5, travel west on Maxwell Sites Road, turn left on Sulphur Gap Road (new permanent), turn right on Lurline Road (new permanent, detour during construction), turn right on Huffmaster Road, and turn left on new temporary construction road
3d 4c	Stone Corral Recreation Area Stone Corral Road	• From I-5, travel west on Maxwell Sites Road, turn right on Eastside Road (new permanent), turn left on Stone Corral Road (new permanent), and turn left on Stone Corral Recreation Area Road (new permanent)
3e 4d	Peninsula Hills Recreation Area Peninsula Road	• From I-5, travel west on Maxwell Sites Road to Sites Lodoga Road, and turn right on Peninsula Road (new permanent campground spur road) • From I-5, travel west on Maxwell Sites Road, turn right on Eastside Road (new permanent), turn left on Stone Corral Road (new permanent), across the South Bridge (new permanent) onto Sites Lodoga Road, and turn right on Peninsula Road (new permanent campground spur road)
4e	South Bridge	• From I-5, travel west on Maxwell Sites Road, and turn right on Peterson Road to reach central footings (this route is only available if the bridge is constructed before Sites Dam, which will block access on Maxwell Sites Road) • From I-5, travel west on Maxwell Sites Road and continue straight on Sites Lodoga Road to reach the western approach/footings • From I-5, travel west on Maxwell Sites Road, turn right on Eastside Road (new permanent), and turn left on Stone Corral Road to reach the eastern approach/footings
4f	Com Road	• From I-5, travel west on Maxwell Sites Road, turn left on Sulphur Gap Road (new permanent), and turn right on Lurline Road (new permanent, detour during construction), and turn right on Com Road (new permanent)
4g 5 6	Eastside Road Sites Pumping/Generating Plant Field Office Maintenance Yard	• From I-5, travel west on County Road 68, turn left on County Road D, turn right on County Road 69, and turn left on Eastside Road (new permanent) • From I-5, travel west on Maxwell Sites Road and turn right on Eastside Road (new permanent)
4h	Sulphur Gap Road	• From I-5, travel west on Maxwell Sites Road, and turn left on Sulphur Gap Road (new permanent)

Table 26-12
Expected Roadway Access Routes to Project Facilities

Facility #	Project Feature	Access Route
4i	North Road	• From I-5, travel west on County Road 68, turn left on County Road D, turn right on County Road 69, continue straight on North Road (new permanent) • From I-5, travel west on Maxwell Sites Road, and turn right on Eastside Road (new permanent) and follow to North Road
7 8	Holthouse Reservoir Complex Holthouse Reservoir Electrical Switchyard	• From I-5, travel west on County Road 68, turn left on County Road D, turn right on County Road 69, turn left on Eastside Road (new permanent), turn left on access road on south side of Funks Reservoir • From I-5, travel west on Maxwell Sites Road and turn right on Eastside Road (new permanent), turn right on access road on south side of Funks Reservoir
9 10	Sites Electrical Switchyard Tunnel from Sites Pumping/Generating Plant to Sites Reservoir Inlet/Outlet Structure	• From I-5, travel west on County Road 68, turn left on County Road D, turn right on County Road 69, turn left on Eastside Road (new permanent), and turn left on new permanent O&M road • From I-5, travel west on Maxwell Sites Road, turn right on Eastside Road (new permanent), turn right on new permanent O&M road
11	Sites Reservoir Inlet/Outlet Structure	• From I-5, travel west on Maxwell Sites Road, turn left onto Sulphur Gap Road, to Lurline Road, to Huffmaster Road, to Peterson Road
12	GCID Canal Facilities Modifications Headgate Modifications Railroad Siphon Modifications	 • From I-5, travel east on SR 32 and turn left on Canal Road • From I-5 northbound, exit County Road 53, immediately turn left onto SR 99, and proceed 1.1 miles north to the intersection with the GCID Canal. Turn right at GCID Canal; the railroad siphon is approximately 200 feet east of SR 99
13 14 15 16 17	GCID Canal Connection to the TRR TRR TRR Pumping/Generating Plant TRR Electrical Switchyard GCID Canal Connection to the TRR	• From I-5, travel west on Delevan Road, and turn left on McDermott Road or turn left on Noel Evan Road
18 19 20	TRR Pipeline TRR Pipeline Road Delevan Pipeline Electrical Switchyard	• From I-5, travel west on Delevan Road, turn left on McDermott Road, turn right on temporary construction access road
21a 22a	Delevan Pipeline (western portion) Delevan Transmission Line (western portion)	• From I-5, travel west on Delevan Road, then turn left on Sutton Road, McDermott Road, or County Road D

Table 26-12
Expected Roadway Access Routes to Project Facilities

Facility #	Project Feature	Access Route
23 24 21b 22b	Delevan Pipeline Intake Facilities Delevan Pipeline Discharge Facility Delevan Pipeline (eastern portion) Delevan Transmission Line (eastern end)	• From I-5, travel east on Maxwell Road, and turn left on SR 45 • From I-5, travel east on SR 162, and turn right on SR 45
21c 22c	Delevan Pipeline (central portion) Delevan Transmission Line (central portion)	• From I-5, travel east on Maxwell Road, and turn left on Four Mile Road or Two Mile Road • From I-5, travel east on Delevan Road, and turn right on Four Mile Road or Two Mile Road
21d	Delevan Pipeline (far western portion)	• From I-5, travel west on County Road 68, turn left on County Road D, turn right on County Road 69, and turn left on Eastside Road (new permanent) • From I-5, travel west on Maxwell Sites Road, and turn right on Eastside Road (new permanent)
25	Borrow Areas (Generally Within the Reservoir Inundation Area or Adjacent on Logan Ridge)	• From I-5, travel west on County Road 68, turn left on County Road D, turn right on County Road 69, and turn left on Eastside Road (new permanent) • From I-5, travel west on Maxwell Sites Road, turn left on right on Eastside Road (new permanent) • From I-5, travel west on Maxwell Sites Road, turn left on Sulphur Gap Road (new permanent), turn right on Lurline Road (new permanent, detour during construction), turn right on Huffmaster Road, and travel straight on Peterson Road • From I-5, travel west on Maxwell Sites Road

Notes:
I = Interstate Freeway
O&M = Operations and maintenance
SR = State Route

Glenn County

Ten roadways in Glenn County were identified as primary access roads to Project facility sites. The roadways and a summary of their observed characteristics are listed in Table 26-13.

Table 26-13
Characteristics of Roadways in Glenn County that are Main Access Routes to Project Facilities

Roadway	Project Facility # Accessed by Roadway[a]	Number of Lanes	Roadway Condition[b]	Comments
I-5	All Project facilities	4	Good	Divided Interstate
SR 32	12	2	Fair to Good	Through Orland, it is two paved lanes with a center lane and on-street parking in places; two paved lanes east of town with some visible cracks
County Road 68	1a, 2b, 2c, 3a, 4g, 4i, 5, 6, 7, 8, 9,	2	Poor to Good	Shoulders partially paved; some visible cracks

Table 26-13
Characteristics of Roadways in Glenn County that are Main Access Routes to Project Facilities

Roadway	Project Facility # Accessed by Roadway[a]	Number of Lanes	Roadway Condition[b]	Comments
	10, 21d, 25			
County Road 69	1a, 2b, 2c, 3a, 4g, 4i, 5, 6, 7, 8, 9, 10, 21d, 25	2	Fair to Good	
County Road D	1a, 2b, 2c, 3a, 4g, 4i, 5, 6, 7, 8, 9, 10, 21a, 21d, 22a, 25	2	Fair to Good	No shoulder at some locations
Canal Road	12	2	Good	No shoulders

[a]Refer to Table 26-12 for the Project facility name associated with each Project facility number.

[b]Roadway Condition: Good = Fully paved with very few cracks or potholes that result in desirable driving conditions.
Fair = Fully paved with some cracks or potholes that result less-than-desirable driving conditions.
Poor = Un-paved or paved with significant cracks and potholes that need to be avoided while driving and result in undesirable driving conditions.

Notes:
I = Interstate Freeway
SR = State Route

ADTs on selected representative road segments in Glenn County are presented in Table 26-14. Figure 3-1 in Chapter 3 Description of the Proposed Project/Proposed Action and Alternatives shows the locations of these roads relative to the Glenn County portion of the Project facility sites.

Table 26-14
2010 ADT for Selected Roads in Glenn County

Roadway	Segment	Year	ADT	Calculated 2010 ADT	2010 Level of Service[a]
I-5	Glenn/Colusa County Line to County Road 68	2008	25,000	26,523	C
I-5	County Road 16 to SR 32 E	2008	25,000	26,523	C
SR 32	I-5 to SR 45	2010	10,800	10,800	D
County Road 68	County Road F to I-5	2009	186	192	A
County Road 68	I-5 to County Line/Norman Road	2007	212	232	A
County Road 69	I-5 to County Road F	2011[b]	20	20	A
County Road D	Glenn/Colusa County Line to County Road 57	2009	390	402	A
Canal Road	SR 32 to end of road	2011[b]	1,900	1,740	B

[a]Refer to Tables 26-4 and 26-5 for the Level of Service criteria.

[b]2010 data are not available

Notes:
ADT = Average Daily Traffic
I = Interstate Freeway
SR = State Route

Source: Glenn County, 2011; Caltrans, 2009.

Colusa County

Fourteen roadways in Colusa County were identified as primary access roads to Project facility sites. The roadways and a summary of their observed characteristics are listed in Table 26-15. Figure 3-1 in Chapter 3 Description of the Proposed Project/Proposed Action and Alternatives shows the locations of these roads relative to the Colusa County portion of the Project facility sites.

The proposed Sites Reservoir would be located approximately 10 miles west of the town of Maxwell. Maxwell Sites Road would provide east-to-west access through that Project site. This road experiences higher traffic volumes than other local roadways in the area, particularly on weekends. Travelers use this road to access East Park Reservoir, the southwest portion of the Mendocino National Forest, and the communities of Stonyford and Lodoga (Calfed Bay-Delta Program, 2000).

Table 26-15
Characteristics of Roadways in Colusa County that are Main Access Routes to Project Facilities

Roadway	Project Facility # Accessed by Roadway[a]	Number of Lanes	Roadway Condition[b]	Comments
I-5	All Project facilities	4	Good	Divided interstate highway.
SR 45 (Colusa County only)	16, 17, 21b, 22b	2	Fair to Good	25 mph to 55 mph posted speed limit; unpaved shoulders at some locations.
SR 162	16, 17, 21b, 22b	2	Fair to Good	Through Willows, it is four paved lanes with a center lane; two paved lanes east of town with some visible cracks (some sealed, some not sealed)
Maxwell Sites Road	1b, 1c, 2a, 2b, 3b, 3c, 3d, 3e, 4b, 4c, 4d, 4e, 4f, 4g, 4h, 4i, 5, 6, 7, 8, 9, 10, 11, 21b, 21c, 22b, 22c, 23, 24, 25	2	Fair to Good	Narrow shoulders east of Maxwell. Unpaved or no shoulders west of Mills Orchard; 35 mph posted speed limit.
Huffmaster Road	1c, 3c, 11, 25	1½	Poor to Fair	From Maxwell Sites Road intersection south 0.2 mile, the road is cracked, potholed pavement; gravel road south of that point.
Sites Lodoga Road	3e, 4e	2	Poor to Good	Shoulders sometimes absent; 25 mph posted speed limit east of Lodoga Stonyford Road.
Delevan Road	13, 14, 15, 16, 17, 18, 19, 20, 21a, 21c, 22a, 22c	2	Good and Poor to Fair	Paved shoulders are narrow near the canal, and east of Old Hwy 99. Some areas are depressed; some potholes, cracking, and patching. New pavement west of I-5 to McDermott Road. Dirt and below grade west of McDermott Road (possibly being prepared for paving).
Noel Evan Road	13, 14, 15, 16, 17	1	Poor	A gravel canal road.
Sutton Road	21a, 22a	1½ to 2	Poor and Fair to Good	North of Delevan Road: gravel 1½-lane road (poor condition); south of Delevan Road: paved two-lane road with no shoulders (fair to good condition)
Four Mile Road	21c, 22c	2	Poor to Fair	Dirt and gravel road south of Delevan Road and north of Maxwell Road.

Table 26-15
Characteristics of Roadways in Colusa County that are Main Access Routes to Project Facilities

Roadway	Project Facility # Accessed by Roadway[a]	Number of Lanes	Roadway Condition[b]	Comments
Two Mile Road	21c, 22c	2	Poor to Fair	Dirt and gravel road south of Delevan Road and north of Maxwell Road.
Maxwell Road	21b, 21c, 22b, 22c, 23, 24	2	Poor to Good	Narrow shoulders; 35 mph posted speed limit.
McDermott Road	13, 14, 15, 16, 17, 21a, 22a	2	Fair to Good	Narrow or no shoulder. Some patching, some cracking. New pavement north of Delevan Road. Gravel north of Dirks Road.
Peterson Road	4e, 11, 25	2	Poor	Unpaved; dirt and gravel road wide enough for two cars.

[a]Refer to Table 26-12 for the Project facility name associated with each Project facility number.

[b]Roadway Condition: Good = Fully paved with very few cracks or potholes that result in desirable driving conditions.
Fair = Fully paved with some cracks or potholes that result less-than-desirable driving conditions.
Poor = Un-paved or paved with significant cracks and potholes that need to be avoided while driving and result in undesirable driving conditions.

Notes:
I = Interstate Freeway
mph = miles per hour
SR = State Route

ADTs on the selected representative road segments are presented in Table 26-16.

Table 26-16
2010 ADT for Selected Roads in Colusa County

Roadway	Segment	Year	Daily Traffic Volumes	Calculated 2010 ADT	2010 Level of Service[a]
I-5	SR 20 to Maxwell Colusa Road	2008	24,700	25,698	C
I-5	Delevan Road to Glenn/Colusa County Line	2008	25,000	26,010	C
SR 45	Maxwell Colusa Road to County Road P29	2008	2,100	2,185	B
SR 45	County Road P29 to Glenn/Colusa County Line	2008	2,300	2,393	B
SR 162	County Road D to SR 45	2010	8,800	8,800	D
Maxwell Sites Road	I-5 to Sutton Road	2000	1,486	1,812	B
Maxwell Sites Road	GCID Canal to Sites Lodoga Road	2000	618	754	A
Huffmaster Road	Beginning of road to end of road	N/A	N/A	N/A	N/A
Sites Lodoga Road	Maxwell Sites Road to Leesville Lodoga Road	2000	360	439	A
Delevan Road	Four Mile Road to GCID Canal	1994	364	500	A
Noel Evan Road[b]	South from gravel portion of Delevan Road	N/A	N/A	N/A	N/A
Sutton Road	Maxwell Sites Road to Delevan Road	2010	234	234	A
Excelsior Road/Four Mile	Maxwell Road to Delevan Road	2003	44	51	A

Table 26-16
2010 ADT for Selected Roads in Colusa County

Roadway	Segment	Year	Daily Traffic Volumes	Calculated 2010 ADT	2010 Level of Service[a]
Road					
Pole Line Road/Two Mile Road	Delevan Road to Maxwell Colusa Road	2003	76	88	A
Maxwell Road	I-5 to SR 45	2007	2,389	2,535	B
McDermott Road	Maxwell Sites Road to Lenahan Road	1994	265	364	A
Peterson Road[b]	Beginning of road to end of road	N/A	N/A	N/A	N/A

[a]Refer to Tables 26-4 and 26-5 for the Level of Service criteria.

[b]This road provides access to a Project facility site, but because no data are available, it is not included in the impact analysis (N/A).

Notes:

ADT = Average Daily Traffic
I = Interstate Freeway
SR = State Route

Source: Colusa County, 2011; Caltrans, 2009 and 2010.

Transit System

Glenn County

The Glenn Transit Service is the public transit operator for Glenn County, administered by the Glenn County Department of Public Works. It offers four types of public transportation services (Nelson/Nyygard, 2008):

- **Glenn Ride** is the only general fixed-route inter-city transit service in the county, connecting Willows, Artois, Orland, and Hamilton City, as well as Chico in Butte County. Seven trips are provided during the weekdays and three trips are provided on Saturday. No service is provided on Sundays.
- **Glenn Transport (Dial-a-Ride)** is available to senior residents who meet particular eligibility requirements and are unable to use the Glenn Ride bus system. Services are restricted to within a 1.5-mile radius of the City Halls of Orland and Willows, the Leisure Mobile Home Park, the Willows-Glenn Mobile Home Park, and the Huggins/Cannell Drives area. The service operates from 7:30 a.m. to 6:00 p.m. on weekdays and from 9:00 a.m. to 4:00 p.m. on Saturdays.
- **Volunteer Medical Transport** provides transportation service to medical appointments for Glenn County residents who are unable to use Glenn Ride and do not have a personal mode of transportation. Volunteers use their personal vehicles to transport the patients.
- **CalWORKs "Ride to Work"** offers a van service to eligible CalWORKs workers referred by Glenn County Human Resource Agency. Transportation is provided to and from work opportunities.

Colusa County

Nine vehicles comprise the Colusa County Transit services. The services include:

- Five routes operated on a fixed route and schedule. Pick-ups are arranged on a dial-a-ride basis, with door-to-door service available for ADA passengers.
- Out-of-county medical transportation service provided to Chico, Davis, Lincoln, Marysville, Oroville, Roseville, Sacramento, Willows, Woodland, and Yuba City.
- Trips to/from Yuba City provided on Fridays (bus departs Colusa at 9:30 a.m. and departs Yuba City at 1:30 p.m.).
- Charter trips can be arranged using the available fleet if it does not interfere with regularly scheduled service.

Rail Traffic

Railway Facilities and Operations

The West Valley Line of the California Northern Railroad (CFNR) is located east of the town of Sites, and operates between Davis and Tehama, California. The major commodities carried by CFNR include tomato products, olives, rice, cheese, frozen foods, beer, wine, and wheat, as well as stone, petroleum products, and chemicals. The CFNR does not provide passenger service.

Air Traffic

Air Facilities and Operations

The airfield nearest to the town of Sites is Moller Airport located approximately eight miles to the east, outside of Maxwell, California. There are eight single engine aircraft based at Moller Airport. Other nearby airports include Colusa County Airport, Gunnersfield Ranch Airport, Antelope Valley Ranch Airport, and Willows-Glenn County Airport.

26.3 Environmental Impacts/Environmental Consequences

26.3.1 Regulatory Setting

Navigable waterways and transportation/traffic are regulated at the federal, State, and local levels. Provided below is a list of the applicable regulations. These regulations are discussed in detail in Chapter 4 Environmental Compliance and Permit Summary of this EIR/EIS.

26.3.1.1 Federal Plans, Policies, and Regulations

- National Environmental Policy Act (NEPA) of 1969
- Rivers and Harbors Act of 1899, Section 10

26.3.1.2 State Plans, Policies, and Regulations

- California Environmental Quality Act (CEQA) of 1970
- California Department of Transportation (Caltrans) regulatory authority over the California State highway system

26.3.1.3 Regional and Local Plans, Policies, and Regulations

- Glenn County General Plan
- Colusa County General Plan

26.3.2 Evaluation Criteria and Significance Thresholds

Significance criteria represent the thresholds that were used to identify whether an impact would be significant. Appendix G of the *CEQA Guidelines* does not include significance criteria for navigation, and suggests the following evaluation criteria for transportation and traffic:

Would the Project:

- Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?
- Conflict with an applicable congestion management program, including, but not limited to, level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?
- Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?
- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?
- Result in inadequate emergency access?
- Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

The evaluation criteria used for this impact analysis represent a combination of the Appendix G criteria and professional judgment that considers current regulations, standards, and/or consultation with agencies, knowledge of the area, and the context and intensity of the environmental effects, as required pursuant to NEPA. For the purposes of this analysis, an alternative would result in a significant impact if it would result in any of the following:

- Conflict with navigation along navigable waterways.
- Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit.
- Conflict with an applicable congestion management program, including, but not limited to, Level of Service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways.

- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
- Result in inadequate emergency access.
- Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

Within the Primary Study Area, Level of Service D was considered the significance threshold for Caltrans roadways and Level of Service C was considered the significance threshold for Glenn and Colusa County roadways.

26.3.3 Impact Assessment Assumptions and Methodology

26.3.3.1 Assumptions

The following assumptions were made regarding Project-related construction, operation, and maintenance impacts to navigation, transportation, and traffic:

- Direct Project-related construction, operation, and maintenance activities would occur in the Primary Study Area.
- Direct Project-related operational effects would occur in the Secondary Study Area.
- The only direct Project-related construction activity that would occur in the Secondary Study Area is the installation of an additional pump into an existing bay at the Red Bluff Pumping Plant.
- The only direct Project-related maintenance activity that would occur in the Secondary Study Area is the sediment removal and disposal at the two intake locations (i.e., GCID Canal Intake and Red Bluff Pumping Plant).
- No direct Project-related construction or maintenance activities would occur in the Extended Study Area.
- Direct Project-related operational effects that would occur in the Extended Study Area are related to San Luis Reservoir operation; increased reliability of water supply to agricultural, municipal, and industrial water users; and the provision of an alternate Level 4 wildlife refuge water supply. Indirect effects to the operation of certain facilities that are located in the Extended Study Area, and indirect effects to the consequent water deliveries made by those facilities, would occur as a result of implementing the alternatives.
- The existing bank protection located upstream of the proposed Delevan Pipeline Intake/Discharge facilities would continue to be maintained and remain functional.
- No additional channel stabilization, grade control measures, or dredging in the Sacramento River at or upstream of the Delevan Pipeline Intake/Discharge facilities would be required.

26.3.3.2 Methodology

Navigation

When considering Project construction impacts on the navigability of the Sacramento River, a review was conducted of the construction activities and equipment that would be required to construct the Delevan

Pipeline Intake Facilities and the Delevan Pipeline Discharge Facility. Data regarding the number and types of equipment that would be required to construct, operate, and maintain Project facilities were developed by Project engineers.

When considering Project operation impacts on the navigability of the Sacramento River, the proposed diversion and release amounts and velocities were considered.

Transportation

Most transportation impacts are not measured quantitatively, but rather relatively. For the analysis of these impacts, the No Project/No Action Alternative and the action alternatives were compared to Existing Conditions, and impacts were determined based on the criteria defined in Section 26.3.2. Traffic operations impacts were measured quantitatively. Project construction-, operations-, and maintenance-related vehicle trips were added to existing roadways volumes, using data regarding the number and types of equipment and vehicles that would be required to construct, operate, and maintain Project facilities (data were developed by Project engineers).

The roadway volume to capacity ratio was then calculated and the associated Level of Service was determined. The Level of Service from the No Project/No Action Alternative and the action alternatives was then compared to Existing Conditions, and impacts were determined based on the defined criteria (Section 26.3.2) and mobility thresholds, as defined by the transportation facilities' governing agency (Section 26.2.1.2).

For analysis purposes, the peak construction period for each Project facility within each alternative was assumed to overlap. Although the overlap of certain construction phases may not be feasible, this approach accounts for unforeseen schedule changes and provides a conservative analysis. Of the Project construction-related trips, construction worker trips would comprise the majority. Construction workers were assumed to commute to construction sites from regional population centers, including Maxwell, Willows, Orland, Williams, Colusa, and from other northern California counties when specialty trades or skillsets are not available regionally. The number of construction workers required during peak construction of Project facilities varies by alternative, resulting in different trip distributions for each alternative.

To determine impacts to traffic on the local roads, the estimated visitation to Sites Reservoir and its Recreation Areas (developed by Project Economists) was used to estimate the potential distribution of recreation traffic on local roads. The traffic estimate considered a May to September recreation season (with fewer recreationists traveling there October to April – a 70/30 percent split) and a March to November recreation season (with fewer recreationists traveling there December to February – a 95/5 percent split). The traffic estimate also considered more recreation traffic Friday through Sunday than during other week days, as well as 2.6 persons per vehicle.

26.3.4 Topics Eliminated from Further Analytical Consideration

26.3.4.1 Navigation

San Luis Reservoir is not a navigable waterway, so it is not addressed in the analysis for the Extended Study Area. In addition, none of the creeks, bypasses, and reservoirs that are included in the Secondary Study Area are navigable waterways, so they are not addressed in this analysis.

The navigation discussion for the Primary Study Area focuses on the Delevan Pipeline Intake Facilities (Alternatives A and C) and the Delevan Pipeline Discharge Facility (Alternative B) because they are the only proposed facilities that could result in impacts to navigation. The other Project facilities that are proposed within the Primary Study Area are, therefore, not addressed in this analysis.

26.3.4.2 Transportation and Traffic

None of the identified airports (Moller Airport, Colusa County Airport, Gunnersfield Ranch Airport, Antelope Valley Ranch Airport, and Willows-Glenn County Airport) are located near the Project facility sites; therefore, Project construction and operation would not affect air traffic patterns. For this reason, air traffic patterns are not discussed in this analysis.

The transportation and traffic discussion for the Secondary Study Area focuses on the pump installation at the Red Bluff Pumping Plant because this is the only location within that study area where construction and maintenance activities would occur that could result in impacts to transportation and traffic. Operational changes within the waterways of the Secondary Study Area would not affect traffic or transportation, and are, therefore, not addressed in this analysis.

26.3.5 Impacts Associated with the No Project/No Action Alternative

26.3.5.1 Navigation

Extended, Secondary, and Primary Study Areas – No Project/No Action Alternative

Construction, Operation, and Maintenance Impacts

Agricultural Water Use, Municipal and Industrial Water Use, Wildlife Refuge Water Use, Trinity River, Klamath River downstream of the Trinity River, Sacramento River, Feather River, American River, Sacramento-San Joaquin Delta, Suisun Bay, San Pablo Bay, San Francisco Bay, and Pump Installation at the Red Bluff Pumping Plant

Impact Nav-1: Conflict with Navigation along Navigable Waterways

The No Project/No Action Alternative includes implementation of projects and programs being constructed, or those that have gained approval as of June 2009. The impacts of these projects have already been evaluated on a project-by-project basis, pursuant to CEQA and/or NEPA, and their potential for impacts to navigation has been addressed in those environmental documents. Therefore, **there would not be a substantial adverse effect** on navigation when compared to Existing Conditions.

Population growth is expected to occur in California throughout the period of Project analysis (i.e., 100 years), and is included in the assumptions for the No Project/No Action Alternative. A larger population could be expected to cause increased use of navigable waterways throughout the State, both for commerce and recreational purposes. Navigation impacts that could potentially occur as a result of the increased population would be managed by USDOT for issues related to interstate marine traffic, and local navigation issues would be managed at the local level in accordance with those agencies' regulations. Therefore, **there would not be a substantial adverse effect,** when compared to Existing Conditions

Projects considered within the No Project/No Action Alternative are not located within the Primary Study Area and **would, therefore, not have a substantial adverse effect** on navigation within that study area, when compared to Existing Conditions. In addition, if the No Project/No Action Alternative is

implemented, no new Project-related construction would occur within any of the three study areas. Therefore, **there would not be a substantial adverse effect** on navigation in existing waterways within the Extended, Secondary, or Primary study areas, when compared to Existing Conditions**.**

26.3.5.2 Transportation and Traffic

Extended, Secondary, and Primary Study Areas – No Project/No Action Alternative

Construction, Operation, and Maintenance Impacts

Agricultural Water Use, Municipal and Industrial Water Use, Wildlife Refuge Water Use, San Luis Reservoir, and Pump Installation at the Red Bluff Pumping Plant

Impact Trans-1: Conflict with an Applicable Plan, Ordinance, or Policy Establishing Measures of Effectiveness for the Performance of the Circulation System, Considering all Modes of Transportation

If the No Project/No Action Alternative is implemented, Project-related construction would not occur and the Project would not be completed. In addition, other projects and programs included in the No Project/No Action Alternative would occur as planned, but would not result in a conflict with plans, ordinances, or policies regarding the transportation systems within the three study areas that has not already been addressed in environmental documents that have been prepared, pursuant to CEQA and NEPA, addressing those projects. Therefore, **there would not be a substantial adverse effect**, when compared to Existing Conditions

Population growth that is expected to occur in California throughout the period of Project analysis is included in the assumptions for the No Project/No Action Alternative. A larger population could be expected to result in increased traffic levels, which have been anticipated in local general plans and regional transportation plans and policies. Therefore, **there would not be a substantial adverse effect,** when compared to Existing Conditions.

Impact Trans-2: Conflict with an Applicable Congestion Management Program, Including, but not Limited to, Level of Service Standards and Travel Demand Measures, or Other Standards Established by the County Congestion Management Agency for Designated Roads or Highways

Refer to the **Impact Trans-1** discussion. For those same reasons, implementation of the No Project/No Action Alternative would not conflict with congestion management programs, Level of Service standards, travel demand measures, or other transportation standards within the Extended, Secondary, or Primary study areas. Therefore, **there would not be a substantial adverse effect**, when compared to Existing Conditions

Impact Trans-3: Substantially Increase Hazards Due to a Design Feature or Incompatible Uses

Refer to the **Impact Trans-1** discussion. For those same reasons, implementation of the No Project/No Action Alternative would not affect existing roadway hazards, such as curved alignments or dangerous intersections that may exist within the Extended, Secondary, or Primary study areas. In addition, there would be no potential conflicts between vehicles and farm equipment on roads within the Extended, Secondary, or Primary study areas. Therefore, **there would not be a substantial adverse effect,** when compared to Existing Conditions

Impact Trans-4: Result in Inadequate Emergency Access

Refer to the **Impact Trans-1** discussion. For those same reasons, implementation of the No Project/No Action Alternative would not affect existing emergency access to and from properties located within the Extended, Secondary, or Primary study areas. Therefore, **there would not be a substantial adverse effect**, when compared to Existing Conditions.

Impact Trans-5: Conflict with Adopted Policies, Plans, or Programs Regarding Public Transit, Bicycle, or Pedestrian Facilities, or Otherwise Decrease the Performance or Safety of Such Facilities

Refer to the **Impact Trans-1** discussion. For those same reasons, implementation of the No Project/No Action Alternative would not conflict with adopted public transit, bicycle, or pedestrian facility policies, plans, or programs that are currently in effect within the Extended, Secondary, or Primary study areas. Therefore, **there would not be a substantial adverse effect**, when compared to Existing Conditions**.**

26.3.6 Impacts Associated with Alternative A

26.3.6.1 Navigation

Extended Study Area – Alternative A

Construction, Operation, and Maintenance Impacts

Agricultural Water Use, Municipal and Industrial Water Use, and Wildlife Refuge Water Use

Impact Nav-1: Conflict with Navigation along Navigable Waterways

Because there would be no direct Project construction or maintenance occurring in the Extended Study Area, there would be no interruption of marine traffic on the navigable waterways within that study area. Implementation of Alternative A would result in increased water supply reliability to agricultural, municipal, and industrial water users, and the provision of an alternate Level 4 wildlife refuge water supply. These operational changes would not result in interruption of marine traffic on the navigable waterways within the Extended Study Area. Therefore, there would be **no impact**, when compared to Existing Conditions and the No Project/No Action Alternative.

Secondary Study Area – Alternative A

Construction, Operation, and Maintenance Impacts

Trinity River, Klamath River downstream of the Trinity River, Sacramento River, Feather River, American River, Sacramento-San Joaquin Delta, Suisun Bay, San Pablo Bay, San Francisco Bay, and Pump Installation at the Red Bluff Pumping Plant

Impact Nav-1: Conflict with Navigation along Navigable Waterways

The only direct Project-related construction that would occur in the Secondary Study Area is the installation of an additional pump into an existing bay at the Red Bluff Pumping Plant on the Sacramento River. This construction activity would not affect the navigational channel of the Sacramento River, and therefore, is not expected to result in interruption of marine traffic along that portion of the Sacramento River. The only direct Project-related maintenance activity that would occur is the removal and disposal of sediment from the existing GCID Canal Intake and the Red Bluff Pumping Plant. This activity is expected to occur within the footprint of the Project facilities, and is not expected to affect the

navigational channel of the Sacramento River. Therefore, there would be **no impact**, when compared to Existing Conditions and the No Project/No Action Alternative.

Implementation of Alternative A would result in operational changes to the navigable waterways included in the Secondary Study Area. However, these operational changes would fall within the historical range of operation of these waterbodies, resulting in **no impact** when compared to Existing Conditions and the No Project/No Action Alternative.

Primary Study Area – Alternative A

Construction, Operation, and Maintenance Impacts

Delevan Pipeline Intake Facilities

Impact Nav-1: Conflict with Navigation along Navigable Waterways

The cofferdam that would be installed to dewater the Project facility's construction site would extend into the river approximately 40 feet from the river bank, compared to a low-flow river channel width of 240 feet. The navigational channel of the Sacramento River would, therefore, be narrowed during the construction of the Delevan Pipeline Intake Facilities, but would not substantially affect the navigability of the Sacramento River at that location. This would result in a **less-than-significant impact**, when compared to Existing Conditions and the No Project/No Action Alternative.

The existing Maxwell ID Pumping Plant, located immediately upstream of the proposed Delevan Pipeline Intake location, is located in a narrow section of the river and consequently acts as a local flow control point (Reclamation, 2012). Therefore, following construction, the Delevan Pipeline Intake Facilities would not alter the flow of the river. This would result in a **less-than-significant impact**, when compared to Existing Conditions and the No Project/No Action Alternative.

Alternative A operations are not expected to alter the navigable channel of the Sacramento River. Operation of the proposed Delevan Pipeline Intake Facilities is expected to follow flow regime criteria that are set forth by the resource agencies, and as such, would maintain sufficient flow to not adversely affect marine traffic. In addition, at low flow of 6,000 cfs in the river, the proposed fish screen would extend approximately 40 feet into the 240-feet-wide river channel, which would allow for recreational boat traffic to pass the fish screen structure. Therefore, there would be a **less-than-significant impact,** when compared to Existing Conditions and the No Project/No Action Alternative.

26.3.6.2 Transportation and Traffic

Extended Study Area – Alternative A

Construction, Operation, and Maintenance Impacts

Agricultural Water Use, Municipal and Industrial Water Use, Wildlife Refuge Water Use, and San Luis Reservoir

Impact Trans-1: Conflict with an Applicable Plan, Ordinance, or Policy Establishing Measures of Effectiveness for the Performance of the Circulation System, Considering all Modes of Transportation

Because there would be no direct Project construction- or maintenance-related vehicle trips occurring in the Extended Study Area, there would be no conflict with plans, ordinances, or policies regarding the transportation systems within the Extended Study Area. Implementation of Alternative A would result in

slight operational changes to San Luis Reservoir, increased water supply reliability to agricultural, municipal, and industrial water users, and the provision of an alternate Level 4 wildlife refuge water supply. These operational changes would not be expected to result in changes to traffic levels. Therefore, there would be **no impact**, when compared to Existing Conditions and the No Project/No Action Alternative.

Impact Trans-2: Conflict with an Applicable Congestion Management Program, Including, but not Limited to, Level of Service Standards and Travel Demand Measures, or Other Standards Established by the County Congestion Management Agency for Designated Roads or Highways

Refer to the **Impact Trans-1** discussion. For those same reasons, there would be no conflict with congestion management program standards or measures within the Extended Study Area. Therefore, there would be **no impact**, when compared to Existing Conditions and the No Project/No Action Alternative.

Impact Trans-3: Substantially Increase Hazards Due to a Design Feature or Incompatible Uses

Refer to the **Impact Trans-1** discussion. For those same reasons, there would be no increase in hazards due to a design feature or incompatible use within the Extended Study Area. Therefore, there would be **no impact**, when compared to Existing Conditions and the No Project/No Action Alternative.

Impact Trans-4: Result in Inadequate Emergency Access

Refer to the **Impact Trans-1** discussion. For those same reasons, there would be no change in emergency access. Therefore, there would be **no impact**, when compared to Existing Conditions and the No Project/No Action Alternative.

Impact Trans-5: Conflict with Adopted Policies, Plans, or Programs Regarding Public Transit, Bicycle, or Pedestrian Facilities, or Otherwise Decrease the Performance or Safety of Such Facilities

Refer to the **Impact Trans-1** discussion. For those same reasons, there would be no conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities. Therefore, there would be **no impact**, when compared to Existing Conditions and the No Project/No Action Alternative.

Secondary Study Area – Alternative A

Construction, Operation, and Maintenance Impacts

Pump Installation at the Red Bluff Pumping Plant

Impact Trans-1: Conflict with an Applicable Plan, Ordinance, or Policy Establishing Measures of Effectiveness for the Performance of the Circulation System, Considering all Modes of Transportation

The only direct Project-related construction that would occur in the Secondary Study Area is the installation of an additional pump into an existing bay at the Red Bluff Pumping Plant. The only direct Project-related maintenance activity that would occur is the removal of sediment from the existing canal intakes. Neither of these Project-related activities in the Secondary Study Area is expected to result in conflicts with transportation circulation system plans, ordinances, or policies due to the low number of vehicle trips associated with these activities. Therefore, there would be **no impact**, when compared to Existing Conditions and the No Project/No Action Alternative.

Impact Trans-2: Conflict with an Applicable Congestion Management Program, Including, but not Limited to, Level of Service Standards and Travel Demand Measures, or Other Standards Established by the County Congestion Management Agency for Designated Roads or Highways

Refer to the **Impact Trans-1** discussion. For those same reasons, there would be no conflict with congestion management program standards or measures within the Secondary Study Area. Therefore, there would be **no impact**, when compared to Existing Conditions and the No Project/No Action Alternative.

Impact Trans-3: Substantially Increase Hazards Due to a Design Feature or Incompatible Uses

Refer to the **Impact Trans-1** discussion. For those same reasons, there would be no increase in hazards due to a design feature or incompatible use within the Secondary Study Area. Therefore, there would be **no impact**, when compared to Existing Conditions and the No Project/No Action Alternative.

Impact Trans-4: Result in Inadequate Emergency Access

Refer to the **Impact Trans-1** discussion. For those same reasons, there would be no change in emergency access. Therefore, there would be **no impact**, when compared to Existing Conditions and the No Project/No Action Alternative.

Impact Trans-5: Conflict with Adopted Policies, Plans, or Programs Regarding Public Transit, Bicycle, or Pedestrian Facilities, or Otherwise Decrease the Performance or Safety of Such Facilities

Refer to the **Impact Trans-1** discussion. For those same reasons, there would be no conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities. Therefore, there would be **no impact**, when compared to Existing Conditions and the No Project/No Action Alternative.

Primary Study Area – Alternative A

Construction, Operation, and Maintenance Impacts

All Primary Study Area Project Facilities

Within the Primary Study Area, Project construction-related vehicle trips would occur on numerous roadways for the duration of the Project construction period. The Level of Service for the roadways leading to the proposed Project facilities prior to and during construction is presented in Table 26-17.

Impact Trans-1: Conflict with an Applicable Plan, Ordinance, or Policy Establishing Measures of Effectiveness for the Performance of the Circulation System, Considering all Modes of Transportation

All roadways would continue to operate at an acceptable Level of Service during Project construction. Traffic levels on roadways would increase during Project construction, particularly before construction activities start and after they end each day, and would result in an increase in traffic congestion. The Level of Service on County Road 68 between County Road F and I-5, County Road 69 between I-5 and County Road F, County Road D between the Glenn/Colusa County Line and County Road 57, Maxwell Sites Road between the GCID Canal and Sites Lodoga Road, and Delevan Road between Four Mile Road and the GCID Canal would change from Level of Service A to Level of Service B. This increase in vehicle traffic and congestion would result in a **less-than-significant impact** because the Level of Service criteria for County roadways would not be exceeded, when compared to Existing Conditions and the No Project/No Action Alternative.

Project operation- and maintenance-related traffic would use the same roads that were used for Project construction but would require 60 total vehicles trips per day throughout the Primary Study Area, which would not impact the roadway Level of Service. This would result in a **less-than-significant impact**, when compared to Existing Conditions and the No Project/No Action Alternative, due to the low number of vehicle trips associated with Project operation and maintenance.

During Project operation, recreational traffic would use I-5, County Road 68, County Road D, County Road 69, Maxwell Sites Road, Huffmaster Road, and new Project roads to access Sites Reservoir and its Recreation Areas. Recreational traffic levels on roads leading to these Project facilities are expected to increase from existing levels because recreationists are likely to want to visit the new reservoir to see what it offers. The expected increase in traffic on these roads could cause an associated temporary or even permanent reduction in recreation traffic on roads leading to other regional reservoirs (i.e., those located in the Secondary Study Area).

Table 26-17
2010 and Alternative A Construction Level Of Service

Roadway	Segment	Calculated 2010 ADT	2010 Level of Service*	ADT with Peak Construction Trips	Peak Construction Level of Service
Glenn County Roadways					
I-5	Glenn/Colusa County Line to County Road 68	26,523	C	27,938	C
I-5	County Road 16 to SR 32 E	26,523	C	27,432	C
SR 32	I-5 to SR 45	10,800	D	10,868	D
County Road 68	County Road F to I-5	192	A	1,409	B
County Road 68	I-5 to County Line/Norman Road	232	A	300	A
County Road 69	I-5 to County Road F	20	A	1,237	B
County Road D	Glenn/Colusa County Line to County Road 57	402	A	1,599	B
Canal Road	SR 32 to end of road	1,740	B	2,094	B
Colusa County Roadways					
I-5	SR 20 to Maxwell Colusa Road	25,698	C	26,607	C
I-5	Delevan Road to Glenn/Colusa County Line	26,010	C	27,409	C
SR 45	Maxwell Colusa Road to County Road P29	2,185	B	2,471	B
SR 45	County Road P29 to Glenn/Colusa County Line	2,393	B	2,679	B
SR 162	County Road D to SR 45	8,800	D	9,086	D
Maxwell Sites Road	I-5 to Sutton Road	1,812	B	2,961	B
Maxwell Sites Road	GCID Canal to Sites Lodoga Road	754	A	1,903	B
Huffmaster Road	Beginning of road to end of road	N/A	N/A	519	A

Table 26-17
2010 and Alternative A Construction Level Of Service

Roadway	Segment	Calculated 2010 ADT	2010 Level of Service*	ADT with Peak Construction Trips	Peak Construction Level of Service
Sites Lodoga Road	Maxwell Sites Road to Leesville Lodoga Road	439	A	868	A
Delevan Road	Four Mile Road to GCID Canal	500	A	1,016	B
Sutton Road	Maxwell Sites Road to Delevan Road	234	A	414	A
Excelsior Road/Four Mile Road	Maxwell Road to Delevan Road	51	A	231	A
Pole Line Road/Two Mile Road	Delevan Road to Maxwell Colusa Road	88	A	268	A
Maxwell Road	I-5 to SR 45	2,535	B	2,821	B
McDermott Road	Maxwell Sites Road to Lenahan Road	364	A	880	A

*Refer to Tables 26-4 and 26-5 for the Level of Service criteria.

Notes:
ADT = Average Daily Traffic
I = Interstate Freeway
N/A = not available
SR = State Route

Source: Colusa County, 2011; Caltrans, 2009 and 2010.

Recreational traffic levels on roads leading to these Project facilities are expected to increase from existing levels because recreationists are likely to want to visit the new reservoir to see what it offers. The expected increase in traffic on these roads could cause an associated temporary reduction in recreation traffic on roads leading to other regional reservoirs (i.e., those located in the Secondary Study Area).

Recreation visitor days (RVDs) have been estimated by Project Economists for Alternative A at 360,975 per year[1] (Pavich, 2012). Maxwell Sites Road is expected to have traffic levels that would result in Level of Service D during the Friday through Sunday period during the recreation season (either the March to November or May to September recreation season). I-5 would have Level of Service A or B. County Roads 68, 69, and D are expected to have traffic levels that would result in Level of Service E during the Friday through Sunday period of a March to November recreation season, or a Level of Service that is worse than F during the Friday through Sunday period of a May to September recreation season. This increase would result in a **significant impact** on the Level of Service of County roads listed above, and a **less-than-significant impact** on I-5's Level of Service, when compared to Existing Conditions and the No Project/No Action Alternative.

[1] An RVD is defined as a recreation visit by one person for part or all of one day.

Impact Trans-2: Conflict with an Applicable Congestion Management Program, Including, but not Limited to, Level of Service Standards and Travel Demand Measures, or Other Standards Established by the County Congestion Management Agency for Designated Roads or Highways

Within the Primary Study Area there are no Congestion Management Programs or County Congestion Management Agencies. Therefore, there would be **no impact,** when compared to Existing Conditions and the No Project/No Action Alternative.

Impact Trans-3: Substantially Increase Hazards Due to a Design Feature or Incompatible Uses

All Project construction of roadways and bridges within the Primary Study Area would adhere to the appropriate city, county, and State design standards, resulting in **no impact**, when compared to Existing Conditions and the No Project/No Action Alternative.

During construction, the use of construction equipment, such as oversize or overweight vehicles, on roadways near Project facility sites could result in unsafe conditions or damage to road surfaces. This would result in a **potentially significant impact** due to roadway hazards and damage associated with oversize and overweight loads, when compared to Existing Conditions and the No Project/No Action Alternative.

Project operation- and maintenance-related traffic would not cause damage to road surfaces or unsafe conditions. Therefore, there would be **no impact** during Project operations and maintenance, when compared to Existing Conditions and the No Project/No Action Alternative.

Impact Trans-4: Result in Inadequate Emergency Access

During construction of all Project facilities, the temporary closure of lanes and various roadways would likely occur. Construction of Sites Reservoir and Sites Dam has the potential to cause short-term effects to emergency services access response times by eliminating a portion of Maxwell Sites Road and Sites Lodoga Road, which provide access to both sides of the reservoir. However, the South Bridge would be constructed and operating before the portions of these roads are demolished and removed. The new route that includes the South Bridge would be approximately two miles longer than the existing route. Access to the west side of the proposed Sites Reservoir from the east side during construction of the South Bridge would be via the existing Maxwell Sites and Sites Lodoga roads (i.e., no change from the existing route). Access to the southern portion of Sites Reservoir during the construction of the South Bridge would be via the existing Huffmaster Road (also no change from the existing route). Sulphur Gap Road would be constructed prior to the demolition and removal of the portion of Huffmaster Road that crosses the proposed Sites Reservoir footprint. This and other Project construction activities may affect emergency access to properties near Project construction sites. This would result in a **less-than-significant impact** during Project construction, when compared to Existing Conditions and the No Project/No Action Alternative.

During Project operations and maintenance, adequate emergency access would be maintained. Therefore, there would be **no impact** during Project operation and maintenance, when compared to Existing Conditions and the No Project/No Action Alternative.

Impact Trans-5: Conflict with Adopted Policies, Plans, or Programs Regarding Public Transit, Bicycle, or Pedestrian Facilities, or Otherwise Decrease the Performance or Safety of Such Facilities

Construction of Sites Reservoir and Sites Dam has the potential to cause short-term disruptions to public school bus service by eliminating a portion of Maxwell Sites Road and Sites Lodoga Road, which are part of a bus route for the Maxwell Unified School District. However, the South Bridge would be constructed and operating before the portions of these roads are demolished and removed. Bus service would then be provided via the South Bridge, which would be approximately two miles longer than the existing route. This would, therefore, result in a **less-than-significant** impact during Project construction and operations, when compared to Existing Conditions and the No Project/No Action Alternative. No other conflicts with policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities would occur with the Project.

During Project maintenance, no conflicts with policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities would occur. Therefore, there would be **no impact** during Project maintenance, when compared to Existing Conditions and the No Project/No Action Alternative.

26.3.7 Impacts Associated with Alternative B

26.3.7.1 Navigation

Extended and Secondary Study Areas – Alternative B

Construction, Operation, and Maintenance Impacts

The impacts associated with Alternative B, as they relate to navigable waterways (**Impact Nav-1**), would be the same as described for Alternative A for the Extended and Secondary study areas.

Primary Study Area – Alternative B

Construction, Operation, and Maintenance Impacts

Delevan Pipeline Discharge Facility

Impact Nav-1: Conflict with Navigation along Navigable Waterways

The navigational channel of the Sacramento River would be narrowed slightly during the construction of the Delevan Pipeline Discharge Facility, but would not substantially affect the navigability of the Sacramento River at that location. The cofferdam that would be installed to dewater the Project facility's construction site would extend into the river approximately 5 to 10 feet from the river bank, resulting in a **less-than-significant impact**, when compared to Existing Conditions and the No Project/No Action Alternative.

Alternative B operations are not expected to alter the navigable channel of the Sacramento River. Operation of the proposed Delevan Pipeline Discharge Facility is expected to follow criteria that are set forth by the resource agencies, and as such, releases would be such that they would not adversely affect marine traffic. In addition, the small size of this proposed facility would allow for recreational boat traffic to pass. Therefore, there would be a **less-than-significant impact**, when compared to Existing Conditions and the No Project/No Action Alternative.

26.3.7.2 Transportation and Traffic

Extended and Secondary Study Areas – Alternative B

Construction, Operation, and Maintenance Impacts

The impacts associated with Alternative B, as they relate to circulation system performance (**Impact Trans-1**), congestion management programs (**Impact Trans-2**), design feature hazards or incompatible uses (**Impact Trans-3**), emergency access (**Impact Trans-4**), and adopted transportation policies, plans, or programs (**Impact Trans-5**), would be the same as described for Alternative A for the Extended and Secondary study areas.

Primary Study Area – Alternative B

Construction, Operation, and Maintenance Impacts

The following Project facilities are included in both Alternatives A and B. These facilities would require the same construction methods and operation and maintenance activities regardless of alternative, and would, therefore, result in the same construction, operation, and maintenance impacts to transportation and traffic:

- Recreation Areas
- Sites Pumping/Generating Plant
- Sites Electrical Switchyard
- Tunnel from Sites Pumping/Generating Plant to Sites Reservoir Inlet/Outlet Structure
- Sites Reservoir Inlet/Outlet Structure
- Field Office Maintenance Yard
- Holthouse Reservoir Complex
- Holthouse Reservoir Electrical Switchyard
- GCID Canal Facilities Modifications
- GCID Canal Connection to the TRR
- TRR
- TRR Pumping/Generating Plant
- TRR Electrical Switchyard
- TRR Pipeline
- TRR Pipeline Road
- Delevan Pipeline
- Delevan Pipeline Electrical Switchyard

If Alternative B is implemented, the footprints and construction disturbance areas of Sites Reservoir and Dams, the Road Relocations and South Bridge, and the Delevan Transmission Line would differ from Alternative A. In addition, the Delevan Pipeline Intake Facilities (that are included in Alternative A) would be replaced by the Delevan Pipeline Discharge Facility in Alternative B. However, these differences in the size of the facility footprint, alignment, or construction disturbance area would not change the type of construction, operation, and maintenance activities that were described for Alternative A. They would, therefore, have the same impact on congestion management programs (**Impact Trans-2**), design feature hazards or incompatible uses (**Impact Trans-3**), emergency access (**Impact Trans-4**), and adopted transportation policies, plans, or programs (**Impact Trans-5**) as described for Alternative A.

The boundary of the Project Buffer would be the same for Alternatives A and B, but because the footprints of some of the Project facilities that are included in the Project Buffer would differ between the

alternatives, the acreage of land within the Project Buffer would also differ. However, this difference in the size of the area included within the buffer would not change the type of construction, operation, and maintenance activities that were described for Alternative A. It would, therefore, have the same impact on congestion management programs (**Impact Trans-2**), design feature hazards or incompatible uses (**Impact Trans-3**), emergency access (**Impact Trans-4**), and adopted transportation policies, plans, or programs (**Impact Trans-5**) as described for Alternative A.

The changes to facility footprints and construction disturbance areas would, however, result in a different number of ADT with peak construction trips, with an associated change in Level of Service. The changes associated with implementation of Alternative B, as related to **Impact Trans-1**, are described below.

All Primary Study Area Project Facilities

Impact Trans-1: Conflict with an Applicable Plan, Ordinance, or Policy Establishing Measures of Effectiveness for the Performance of the Circulation System, Considering all Modes of Transportation

When compared to Alternative A, Alternative B would not have construction trips along I-5, SR 162, SR 45, Canal Road, and Maxwell Road related to the Delevan Pipeline Intake Facilities, but would have construction trips along the same roads related to the Delevan Pipeline Discharge Facility. Alternative B would also result in an increase in construction trips along I-5, County Road 68, County Road D, County Road 69, Maxwell Sites Road, and Sites Lodoga Road related to the construction of the larger Sites Reservoir. In addition, the Road Relocations associated with this alternative would differ slightly from Alternative A and the Delevan Transmission Line would be shorter for Alternative B than for Alternative A. The roadway Level of Service for each Project facility prior to and during construction is presented in Table 26-18.

Table 26-18
2010 and Alternative B Construction Level Of Service

Roadway	Segment	Calculated 2010 ADT	2010 Level of Service*	ADT with Peak Construction Trips	Peak Construction Level of Service
Glenn County Roadways					
I-5	Glenn/Colusa County Line to County Road 68	26,523	C	28,043	C
I-5	County Road 16 to SR 32 E	26,523	C	27,431	C
SR 32	I-5 to SR 45	10,800	D	10,868	D
County Road 68	County Road F to I-5	192	A	1,620	B
County Road 68	I-5 to County Line/Norman Road	232	A	300	A
County Road 69	I-5 to County Road F	20	A	1,448	B
County Road D	Glenn/Colusa County Line to County Road 57	402	A	1,810	B
Canal Road	SR 32 to end of road	1,740	B	1,988	B
Colusa County Roadways					
I-5	SR 20 to Maxwell Colusa Road	25,698	C	26,606	C
I-5	Delevan Road to Glenn/Colusa County Line	26,010	C	27,620	C

Table 26-18
2010 and Alternative B Construction Level Of Service

Roadway	Segment	Calculated 2010 ADT	2010 Level of Service*	ADT with Peak Construction Trips	Peak Construction Level of Service
SR 45	Maxwell Colusa Road to County Road P29	2,185	B	2,365	B
SR 45	County Road P29 to Glenn/Colusa County Line	2,393	B	2,573	B
SR 162	County Road D to SR 45	8,800	D	8,980	D
Maxwell Sites Road	I-5 to Sutton Road	1,812	B	3,172	C
Maxwell Sites Road	GCID Canal to Sites Lodoga Road	754	A	2,114	B
Huffmaster Road	Beginning of road to end of road	N/A	N/A	730	A
Sites Lodoga Road	Maxwell Sites Road to Leesville Lodoga Road	439	A	1,079	B
Delevan Road	Four Mile Road to GCID Canal	500	A	1,016	B
Sutton Road	Maxwell Sites Road to Delevan Road	234	A	414	A
Excelsior Road/Four Mile Road	Maxwell Road to Delevan Road	51	A	231	A
Pole Line Road/Two Mile Road	Delevan Road to Maxwell Colusa Road	88	A	268	A
Maxwell Road	I-5 to SR 45	2,535	B	2,715	B
McDermott Road	Maxwell Sites Road to Lenahan Road	364	A	880	A

*Refer to Tables 26-4 and 26-5 for the Level of Service criteria.

Notes:
ADT = Average Daily Traffic
I = Interstate Freeway
SR = State Route

Source: Colusa County, 2011; Caltrans, 2009 and 2010.

All roadways would continue to operate at an acceptable Level of Service. Traffic levels on roadways would increase during Project construction, particularly before construction activities start and after they end each day, and would result in an increase in traffic congestion. The Level of Service on County Road 68 between County Road F and I-5, County Road 69 between I-5 and County Road F, County Road D between the Glenn/Colusa County Line and County Road 57, Maxwell Sites Road between I-5 and Sutton Road and between the GCID Canal and Sites Lodoga Road, Sites Lodoga Road between Maxwell Sites Road and Leesville Lodoga Road, and Delevan Road between Four Mile Road and the GCID Canal would change Level of Service, but would still meet the County roadway criteria of Level of Service C or better. Therefore, this increase in Project construction-related vehicle traffic and congestion would result in a **less-than-significant impact** because Level of Service criteria would not be exceeded, when compared to Existing Conditions and the No Project/No Action Alternative.

Traffic levels associated with Project operations and maintenance would increase, when compared to Existing Conditions and the No Project/No Action Alternative. Project operation- and maintenance-related traffic would use the same roads that were used for Project construction but would require 60 total vehicles trips per day throughout the Primary Study Area, which would not impact the roadway Level of Service. This would result in a **less-than-significant impact**, when compared to Existing Conditions and the No Project/No Action Alternative, due to the low number of vehicle trips associated with Project operations and maintenance.

RVDs have been estimated by Project Economists for Alternative B at 358,049 per year (Pavich, 2012). Maxwell Sites Road is expected to have traffic levels that would result in Level of Service D during the Friday through Sunday period during the recreation season (either the March to November or May to September recreation season). I-5 would have Level of Service A or B. County Roads 68, 69, and D are expected to have traffic levels that would result in Level of Service E during the Friday through Sunday period of a March to November recreation season, or a Level of Service that is worse than F during the Friday through Sunday period of a May to September recreation season. This increase would result in a **significant impact** on the Level of Service of County roads listed above, and a **less-than-significant impact** on I-5's Level of Service, when compared to Existing Conditions and the No Project/No Action Alternative.

26.3.8 Impacts Associated with Alternative C

26.3.8.1 Navigation

Extended, Secondary, and Primary Study Areas – Alternative C

Construction, Operation, and Maintenance Impacts

The impacts associated with Alternative C, as they relate to navigable waterways (**Impact Nav-1**), would be the same as described for Alternative A for the Extended, Secondary, and Primary study areas.

26.3.8.2 Transportation and Traffic

Extended and Secondary Study Areas – Alternative C

Construction, Operation, and Maintenance Impacts

The impacts associated with Alternative C, as they relate to circulation system performance (**Impact Trans-1**), congestion management programs (**Impact Trans-2**), design feature hazards or incompatible uses (**Impact Trans-3**), emergency access (**Impact Trans-4**), and adopted transportation policies, plans, or programs (**Impact Trans-5**), would be the same as described for Alternative A for the Extended and Secondary study areas.

Primary Study Area – Alternative C

Construction, Operation, and Maintenance Impacts

The following Primary Study Area Project facilities are included in Alternatives A, B, and C. These facilities would require the same construction methods and operation and maintenance activities regardless of alternative, and would, therefore, result in the same construction, operation, and maintenance impacts to transportation and traffic:

- Recreation Areas
- Sites Pumping/Generating Plant

- Sites Electrical Switchyard
- Tunnel from Sites Pumping/Generating Plant to Sites Reservoir Inlet/Outlet Structure
- Sites Reservoir Inlet/Outlet Structure
- Field Office Maintenance Yard
- Holthouse Reservoir Complex
- Holthouse Reservoir Electrical Switchyard
- GCID Canal Facilities Modifications
- GCID Canal Connection to the TRR
- TRR
- TRR Pumping/Generating Plant
- TRR Electrical Switchyard
- TRR Pipeline
- TRR Pipeline Road
- Delevan Pipeline
- Delevan Pipeline Electrical Switchyard

The Alternative C design of the Delevan Transmission Line and Delevan Pipeline Intake Facilities is the same as described for Alternative A. These facilities would require the same construction methods and operation and maintenance activities regardless of alternative, and would, therefore, result in the same construction, operation, and maintenance impacts to transportation and traffic as described for Alternative A.

The Alternative C design of the Sites Reservoir Inundation Area and Dams and Road Relocations and South Bridge is the same as described for Alternative B. These facilities would require the same construction methods and operation and maintenance activities regardless of alternative, and would, therefore result in the same construction, operation, and maintenance impacts to transportation and traffic as described for Alternative B.

The boundary of the Project Buffer would be the same for Alternatives A, B, and C, but because the footprints of some of the Project facilities that are included in the Project Buffer would differ between the alternatives, the acreage of land within the Project Buffer would also differ. However, this difference in the size of the area included within the buffer would not change the type of construction, operation, and maintenance activities that were described for Alternative A.

However, these differences in the size of the facility footprint, alignment, or construction disturbance area (between Alternative C and Alternatives A and B) would not change the type of construction, operation, and maintenance activities that were described for Alternative A. They would, therefore, have the same impact on congestion management programs (**Impact Trans-2**), design feature hazards or incompatible uses (**Impact Trans-3**), emergency access (**Impact Trans-4**), and adopted transportation policies, plans, or programs (**Impact Trans-5**) as described for Alternative A.

The changes to facility footprints and construction disturbance areas would, however, result in a different number of ADT with peak construction trips, with an associated change in Level of Service. The changes associated with implementation of Alternative C, as related to **Impact Trans-1**, are described below.

All Primary Study Area Project Facilities

Impact Trans-1: Conflict with an Applicable Plan, Ordinance, or Policy Establishing Measures of Effectiveness for the Performance of the Circulation System, Considering all Modes of Transportation

When compared to Alternative A there would be an increase in construction trips along I-5, County Road 68, County Road D, County Road 69, Maxwell Sites Road, and Sites Lodoga Road due to a larger Sites Reservoir with Alternative C than with Alternative A. When compared to Alternative B, there would be an increase in construction trips related to the larger Delevan Pipeline Intake Facilities (which are not included in Alternative B) and the Delevan Transmission Line (which is a shorter transmission line in Alternative B). The roadway Level of Service for each facility prior to and during construction is presented in Table 26-19.

All roadways would continue to operate at an acceptable Level of Service. Traffic levels on roadways would increase during Project construction, particularly before construction activities start and after they end each day, and would result in an increase in traffic congestion. The Level of Service on County Road 68 between County Road F and I-5, County Road 69 between I-5 and County Road F, County Road D between the Glenn/Colusa County Line and County Road 57, Maxwell Sites Road between I-5 and Sutton Road and between the GCID Canal and Sites Lodoga Road, Sites Lodoga Road between Maxwell Sites Road and Leesville Lodoga Road, and Delevan Road between Four Mile Road and the GCID Canal would change Level of Service, but would still meet the County roadway criteria of Level of Service C or better. This increase in vehicle traffic and congestion would result in a **less-than-significant impact** because Level of Service criteria would not be exceeded, when compared to Existing Conditions and the No Project/No Action Alternative.

Traffic levels associated with Project operations and maintenance would increase, when compared to Existing Conditions and the No Project/No Action Alternative. Project operation- and maintenance-related traffic would use the same roads that were used for Project construction but would require 60 total vehicles trips per day throughout the Primary Study Area, which would not impact the roadway Level of Service. This would result in a **less-than-significant impact**, when compared to Existing Conditions and the No Project/No Action Alternative, due to the low number of vehicle trips associated with Project operations and maintenance.

RVDs have been estimated by Project Economists for Alternative C at 373,659 per year (Pavich, 2012). Maxwell Sites Road is expected to have traffic levels that would result in Level of Service D during the Friday through Sunday period during the recreation season (either the March to November or May to September recreation season). I-5 would have Level of Service A or B. County Roads 68, 69, and D are expected to have traffic levels that would result in Level of Service E during the Friday through Sunday period of a March to November recreation season, or a Level of Service that is worse than F during the Friday through Sunday period of a May to September recreation season. This increase would result in a **significant impact** on the Level of Service of County roads listed above, and a **less-than-significant impact** on I-5's Level of Service, when compared to Existing Conditions and the No Project/No Action Alternative.

Table 26-19
2010 and Alternative C Construction Level Of Service

Roadway	Segment	Calculated 2010 ADT	2010 Level of Service*	ADT with Peak Construction Trips	Peak Construction Level of Service
Glenn County Roadways					
I-5	Glenn/Colusa County Line to County Road 68	26,523	C	28,149	C
I-5	County Road 16 to SR 32 E	26,523	C	27,537	C
SR 32	I-5 to SR 45	10,800	D	10,868	D
County Road 68	County Road F to I-5	192	A	1,620	B
County Road 68	I-5 to County Line/Norman Road	232	A	300	A
County Road 69	I-5 to County Road F	20	A	1,448	B
County Road D	Glenn/Colusa County Line to County Road 57	402	A	1,810	B
Canal Road	SR 32 to end of road	1,740	B	2,094	B
Colusa County Roadways					
I-5	SR 20 to Maxwell Colusa Road	25,698	C	26,712	C
I-5	Delevan Road to Glenn/Colusa County Line	26,010	C	27,620	C
SR 45	Maxwell Colusa Road to County Road P29	2,185	B	2,471	B
SR 45	County Road P29 to Glenn/Colusa County Line	2,393	B	2,679	B
SR 162	County Road D to SR 45	8,800	D	9,086	D
Maxwell Sites Road	I-5 to Sutton Road	1,812	B	3,172	C
Maxwell Sites Road	GCID Canal to Sites Lodoga Road	754	A	2,114	B
Huffmaster Road	Beginning of road to end of road	N/A	N/A	730	A
Sites Lodoga Road	Maxwell Sites Road to Leesville Lodoga Road	439	A	1,079	B
Delevan Road	Four Mile Road to GCID Canal	500	A	1,016	B
Sutton Road	Maxwell Sites Road to Delevan Road	234	A	414	A
Excelsior Road/Four Mile Road	Maxwell Road to Delevan Road	51	A	231	A
Pole Line Road/Two Mile Road	Delevan Road to Maxwell Colusa Road	88	A	268	A
Maxwell Road	I-5 to SR 45	2,535	B	2,821	B
McDermott Road	Maxwell Sites Road to Lenahan Road	364	A	880	A

*Refer to Tables 26-4 and 26-5 for the Level of Service criteria.

Note:

ADT = Average Daily Traffic
I = Interstate Freeway
SR = State Route

Source: Colusa County, 2011; Caltrans, 2009 and 2010.

26.4 Mitigation Measures

26.4.1 Navigation

Because no significant or potentially significant impacts were identified, no mitigation is required or recommended.

26.4.2 Transportation and Traffic

Mitigation measures are provided below and summarized in Table 26-20 for the impacts that have been identified as significant or potentially significant.

Table 26-20
Summary of Mitigation Measures for
NODOS Project Impacts to Traffic

Impact	Associated Project Facility	LOS Before Mitigation	Mitigation Measure	LOS After Mitigation
Impact Trans-1: Conflict with an Applicable Plan, Ordinance, or Policy Establishing Measures of Effectiveness for the Performance of the Circulation System, Considering all Modes of Transportation	Sites Reservoir Inundation Area and Recreation Areas (operation – recreation traffic)	Significant	Mitigation Measure Trans-1: Prepare and Implement a Project Operation Traffic Control Plan	Less than Significant
Impact Trans-3: Substantially Increase Hazards Due to Design Feature or Incompatible Uses	All Project facilities (construction)	Potentially Significant	Mitigation Measure Trans-3: Prepare and Implement a Project Construction Traffic Control Plan	Less than Significant

Note:
LOS = Level of Significance

Mitigation Measure Trans-1: Prepare and Implement a Project Operation Traffic Control Plan

DWR and Reclamation shall prepare and implement an Operation Traffic Control Plan for the Project. Consultation with Glenn and Colusa counties shall occur to determine what those agencies would require to manage the traffic congestion that is expected to occur as a result of recreationists traveling to Sites Reservoir and its Recreation Areas. It is possible that the Counties may want to wait to do any road improvements until a recreation season (or more) has passed, so that actual recreation visitation and associated traffic congestion on local roadways could be monitored.

Consultation and coordination with Caltrans shall also occur to manage traffic at onramps and offramps from I-5 that would connect to the County roads leading to Sites Reservoir and its Recreation Areas.

Consultation with local fire and sheriff departments shall occur to obtain input regarding maintaining adequate emergency response times and access to properties along the roads that comprise the routes to Sites Reservoir and its Recreation Areas.

The Operation Traffic Control Plan may include, but not be limited to, ideas such as:

- Widening the existing County roads that comprise the primary route to Sites Reservoir and its Recreation Areas, and maintaining such roads
- Signalizing or signage at intersections along the primary route to Sites Reservoir and its Recreation Areas
- Developing alternate routes to Sites Reservoir that would intersect at Maxwell Sites Road and signalizing that intersection
- Providing bus service to Sites Reservoir and its Recreation Areas and providing a Park and Ride Lot at the bus pickup location
- Provisions for maintaining emergency vehicle access (detailed measures to be developed in coordination with the local sheriff and fire departments)
- Provisions to reduce potential school bus delays that may occur as a result of Project recreation visitation traffic (detailed measures to be developed in coordination with the local school district and sheriff departments)
- Directional roadway signage to Sites Reservoir and its Recreation Areas

The Operation Traffic Control Plan shall be prepared in coordination with, and approved by, affected agencies, such as Caltrans, Glenn County, Colusa County, and Maxwell Unified School District.

Mitigation Measure Trans-3: Prepare and Implement a Project Construction Traffic Control Plan

DWR and Reclamation shall prepare and implement a Construction Traffic Control Plan for the Project. The Construction Traffic Control Plan shall include, but would not be limited to, the following measures that are intended to manage:

- Construction-related traffic
- Temporary and/or permanent bus reroutes
- Pavement repairs before and after construction
- Measures to reduce emergency vehicle delay and maintain emergency vehicle access (detailed measures to be developed in coordination with the local sheriff and fire departments)
- Measures to accommodate potential school bus reroutes and reduce potential school bus delays (detailed measures to be developed in coordination with the school district and sheriff departments)
- Construction site parking
- Construction signage

The Construction Traffic Control Plan shall be prepared in coordination with, and approved by, affected agencies, such as Caltrans, Glenn County, Colusa County, and Maxwell Unified School District.

Implementation of **Mitigation Measures Trans-1** and **Trans-3** would reduce the level of significance of Project impacts to transportation and traffic to **less than significant**.

26.5 References

26.5.1 Navigation

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